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Path planning by querying persistent stores of trajectory segments

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Abstract

We introduce an algorithm for path planning (long duration) paths of dynamical systems, given a persistent object store containing suitable collections of short duration trajectory segments. We also describe experimental results from a proof-of-concept implementation of the algorithm. The basic idea is to interpret a path planning algorithm as a suitable query on a persistent object store consisting of short duration trajectory segments. The query returns a concatenation of short duration trajectory segments which is close to the desired path. The needed short duration segments are computed by using a divide and conquer algorithm to break up the original path into shorter paths; each shorter path is then matched to a nearby trajectory segment which is part of the persistent object store by using a suitable index function.

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